

SPIDER PREYS ON SPRUCE BUDWORM EGG MASS¹Daniel T. Jennings², Mark W. Houseweart³

ABSTRACT: A penultimate male *Metaphidippus flavipedes* (G. & E. Peckham) (Araneae: Salticidae) was observed feeding on an egg mass of the eastern spruce budworm, *Choristoneura fumiferana* (Clem.) (Lepidoptera: Tortricidae).

Spiders are generally known to feed on mobile prey, chiefly insects. They employ two principal methods to capture their prey: some spiders build webs or silken snares while others actively hunt their prey. Web-building spiders capture a high percentage of flying insects, although walking insects may also be ensnared. As prey-capturing tactics, vagrant hunting spiders employ stealth and ambush triggered by visual and tactical cues. Few spiders have been observed feeding on immobile prey, and even fewer on insect eggs.

On 20 July 1977 at ca. 1600 EDT we observed a jumping spider feeding on a green, unclosed egg mass of the eastern spruce budworm, *Choristoneura fumiferana* (Clem.). At the time, we were looking for unclosed budworm egg masses on young balsam fir trees, *Abies balsamea* (L.) Mill., on Scott Paper Company lands in Blake Township, Piscataquis County, ca. 30 km (18 miles) north of Greenville, Maine. Many of these young fir trees had been heavily defoliated by the spruce budworm. Budworm larval feeding is generally completed by mid-to late June and is followed by pupation, adult moth emergence, mating, and egg laying. The spider, a penultimate male, was observed feeding on an egg mass deposited on a balsam fir needle, ca. 1.4 m (4.5 ft.) above ground. Estimated tree height is 2.4 m (8 ft); dbh = ca. 5 cm.

Upon closer inspection the spider was disturbed and stopped feeding; whereupon, we captured the spider in a 2.0 dram screw cap vial. The egg mass was also collected and placed in the vial with the spider. At this time, the egg mass was green; developing larval-head capsules were not visible through the egg chorions. Closer examination of the egg mass revealed a

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slightly darkened area where the spider was seen feeding.

Spider and egg mass were held in rearing for several days and subsequent observations at infrequent intervals failed to detect any further feeding on the egg mass. However, once the eggs hatched, ca. 5 days after collection, the spider readily captured and fed on 1st instar budworm larvae.

After egg eclosion, spider and egg mass were separated and the spider reared to maturity on houseflies for species determination. The spider is a male *Metaphidippus flavipedes* (G. & E. Peckham), family Salticidae. This species is commonly found on conifers and deciduous trees (Jennings, 1976). Turnbull (1956) found *M. flavipedes* associated with budworm on Douglas-fir, *Pseudotsuga menziesii* (Mirb.) Franco in British Columbia. Renault and Miller (1972) reported this salticid as one of the most common species of arboreal spiders in fir-spruce forests of New Brunswick.

We stained the egg mass in the laboratory (Jennings and Addy, 1968) and found that the 3-row egg mass (5.45 mm long) contained 32 eggs (Fig. 1). Twenty-seven eggs had successfully hatched; 5 eggs apparently failed to hatch and presumably were fed upon by the spider. The total (32) is slightly higher (+7) than that predicted for this size egg mass by Leonard, Simmons, and VanDerwerker (1973).

The extent of spider predation on budworm egg masses is not known. Morris (1948) reported that several species of spiders found on mature balsam fir trees prey on both budworm larvae and eggs; however, the spiders were not identified. Spiders have also been observed feeding on eggs of another forest defoliator, the Douglas-fir tussock moth, *Orgyia pseudotsugata* (McDunnough). Wickman (1977) observed spiders (species undetermined) opening tussock moth eggs and extracting the 1st instar larvae; however, spiders were more commonly observed preying on newly emerged larvae. Other instances of spiders feeding on lepidopterous eggs are summarized by Buschman, et al. (1977).

Because budworm egg masses are difficult to find and predator feedings may be interrupted by observers, we need quantitative methods of detecting spider predation on eggs. Such methods would permit assessing the extent and importance of this source of mortality. Spider-induced egg mortality should be included in studies of the population dynamics of the spruce budworm.

Spider and egg mass are deposited in the arachnid collection of The American Museum of Natural History, New York.

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Figure 1. Spruce budworm egg mass (5.45 mm long) fed upon by *Metaphidippus flavipedes*.

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